WHAT IS CLAIMED IS:

1. A method of forming drain-to-anode connectors in a back plane for an active matrix OLED device, comprising:

a) providing a substrate having at least one dielectric layer over a substrate surface;

b) providing a two-dimensional array of repeating units of thin film elements over the at least one dielectric layer, each of the repeating units including a current control transistor having a drain electrode;

c) providing a first organic layer over the two-dimensional array and a photoresist layer over the first organic layer;

d) exposing the photoresist layer to a pattern of activating radiation, the pattern corresponding to a location of the drain electrode of each of the current control transistors;

e) developing the exposed pattern in the photoresist layer and forming a corresponding pattern of undercut regions in the first organic layer;

f) forming drain-to-anode connectors by depositing conductive material in a line-of-sight pattern so that the conductive material contacts each drain electrode and extends laterally beyond each drain electrode to provide tapered side walls in the undercut regions;

g) removing the patterned first organic layer and the patterned photoresist layer; and

h) forming an anode layer over each drain-to-anode connector and in electrical contact with such connector.

2. The method of claim 1 wherein step h) includes:

i) providing a first organic layer over the two-dimensional array including the drain-to-anode connectors and a photoresist layer over the first organic layer;

ii) exposing the photoresist layer to a pattern of activating radiation, the pattern corresponding to designated locations of an anode layer to be formed;

iii) developing the exposed pattern in the photoresist layer and forming a corresponding pattern of undercut regions in the first organic layer;

iv) forming laterally spaced anode layers by depositing anode-forming material in a line-of-sight pattern so that the anode-forming material contacts each drain-to-anode connector and extends laterally beyond each such connector to provide tapered end walls in the undercut regions; and

v) removing the patterned first organic layer and the patterned photoresist layer.

3. The method of claim 1 wherein step c) further includes baking the first organic layer prior to providing the photoresist layer over the first organic layer, and baking the photoresist layer.

4. The method of claim 1 wherein step g) further includes removing the patterned first organic layer and the patterned photoresist layer by treating such layers with a solvent or with a solvent mixture.

5. The method of claim 3 further including providing an organic anti-reflection material as the first organic layer, and providing a positive-working photoresist material as the photoresist layer.

6. The method of claim 2 further including forming the OLED device over the laterally spaced anode layers.

7. The method of claim 6 wherein the step of forming the OLED device includes forming an organic electroluminescent (EL) medium structure over each laterally spaced anode layer and forming a common cathode layer over the organic EL medium structure.

8. The method of claim 1 wherein the step f) includes depositing metal material in a chamber at reduced pressure by a sputter deposition process or by an electron beam deposition process.

9. The method of claim 8 further including depositing a metal, a metal alloy, or a stack of layers comprised of more than one metal layer, more than one metal alloy layer, or a combination of at least one metal layer and at least one metal alloy layer.